7C Multiplying Functions Name: _____Per: _____

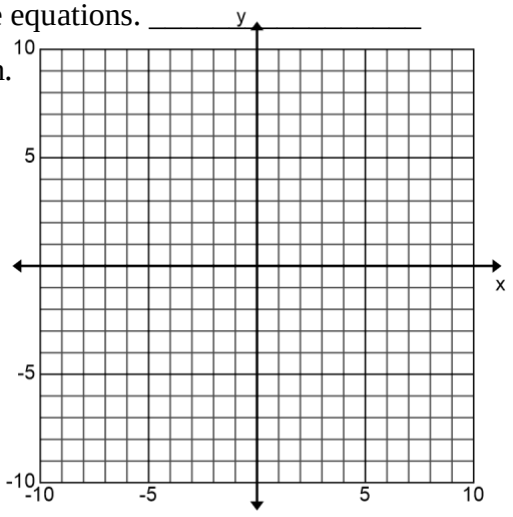
SHOW YOUR WORK AND WORK IN PENCIL Due: January 11th / 14th

1. Choose any method to multiply the following.
   a. $(x+1)(x+2)$ b. $(x+3)(x+7)$ c. $(x+2)(x+6)$

2. Given the two lines $\boldsymbol{g(x) = x - 3}$ and $\boldsymbol{p(x) = -2x + 4}$, give the following information:
   a. g(x) slope: _____ y-intercept: _____ x-intercept :_____ $g(1)$ = _____ Find x if g(x) = 7 ____
   b. p(x) slope: _____ y-intercept: _____ x-intercept :_____ $p(1)$ = _____ Find x if p(x) = 6 ____
   c. Complete the table for the four functions.

x	g(x)	p(x)	g(x) + p(x)	g(x) p(x)
– 1				
0				
1				
2				
3				

   d. g(x) + p(x) slope: _____ y-intercept: _____ Equation for g(x) + p(x)_____
   e. Graph and label the three lines of $\boldsymbol{g(x)}$, $\boldsymbol{p(x)}$, and $\boldsymbol{g(x) + p(x)}$. Use different colors if needed.
   f. Circle $p(1)$ your table and graph. Show how to find with the equations. _____
   g. Circle $g(1)$ in your table and graph. Show how to find with the equations. _____
   h. Find $g(1) + p(1)$ _____ . Circle in table and on graph.
   i. Plot the points of $\boldsymbol{g(x)p(x)}$ from your table.
   j. List the y-intercept(s) of $g(x)p(x)$ (if any) _____
   k. List the x-intercept(s) for $g(x)p(x)$ (if any)_____
   l. When we **add** two functions that are lines, the result of the graph is a _____
   m. When we **multiply** two functions that are lines, the shape of the graph is called a _____.
   n. What is the domain of $p(x)$? _____
   o. What is the range for $g(x) + p(x)$? _____ p. What is the range for $g(x)p(x)$?_____



3. Given the equations $\boldsymbol{f(x) = x + 10}$ and $\boldsymbol{d(x) = 2x - 5}$
   a. $f(1) + d(2)$ _____
   b. $f(-2) - d(3)$ _____
   c. Find, f(x) + d(x) _____
   d. Find, f(x) − d(x) _____
   e. Set up OR show the factors to multiply f(x)d(x): _____
   f. Multiply f(x)d(x): _____
   EC Find $f(d(x))$ _____

4. Using the equations $\boldsymbol{f(x) = x + 6}$ and $\boldsymbol{g(x) = x + 4}$, find the following.
   a. $2f(x) =$ _____
   b. $f(2x) =$ _____
   c. $f(x) + 2 =$ _____
   E.C. $f(x + 2) =$ _____
   d. $f(x) + g(x) =$ _____
   e. $f(x) - g(x) =$ _____
   f. $2f(x) + g(x) =$ _____
   g. $3f(x) + 2g(x) =$ _____
   h. Write the expression for $\frac{f(x)}{g(x)}$ =_____(DO NOT SIMPLIFY)
   i. Show the factors to multiply for $f(x)g(x)$ =_____ Multiply:_____

5. Multiply the following using any method.
   a. $(3x - 3)(2x - 4)$
   b. $(x - 1)(2x + 5)$

Write the equations for the following.

6. $\boldsymbol{f(x) = 2x - 4}$ *and* $\boldsymbol{g(x) = 3x + 1}$
   a. Show the factors (set up) for $f(x)g(x)$
   b. Multiply $f(x)g(x)$
   c. Write the expression for $\frac{f(x)}{g(x)}$

7. Draw the **area model** (boxed method) of each rectangle to find the total.
   a. $(x + 3)(x + 3)$
   b. $(x + 6)(x + 3)$
   c. $(x + 7)(x + 2)$

8. Graph and label $f(x) = 2x + 2$ *and* $g(x) = -x - 3$.
   a. Find $f(-2)$_____, find $g(-2)$_____
   b. Find $f(-2)g(-2)$ _____ and plot that point.
   c. Find $f(-1)g(-1)$ _____ and plot that point.
   d. Find $f(-3)g(-3)$ _____ and plot that point.
   e. Connect the points to show the function of $f(x)g(x)$.
   f. What is the domain of $f(x)$?_____ Range?_____
   g. What is the domain of $g(x)$?_____ Range?_____
   h. What is the domain of $f(x)g(x)$?_____ Range?_____
   i. What do you notice about the x-intercepts of the three functions? _____
   j. Multiply $f(x)g(x)$